APR 16 1987

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MINERAL INDUSTRY SURVEYS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241

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Sulfur, Annual Advance Summary

SULFUR IN 1986

Domestic production of sulfur in all forms decreased slightly from the quantity produced in 1985 to 11.1 million metric tons in 1986, according to the Bureau of Mines, U.S. Department of the Interior. The distribution of production was as follows: Frasch sulfur, 37%; recovered elemental sulfur, 52%; and contained sulfur in other forms, 11%. Shipments of sulfur in all forms to domestic and export markets were essentially the same as 1985 shipments. Frasch and recovered elemental sulfur accounted for 89% of total shipments of sulfur in all forms in 1986. Record high production from petroleum refineries was responsible for recovered sulfur shipments reaching an alltime high in 1986. The total value of shipments f.o.b. mine/plant decreased 3%. Eighty-three percent of the shipments was for domestic consumption and 17% for export. Shipments of sulfur in all forms in 1986 were slightly greater than the quantity produced.

The average net shipment value for all elemental sulfur was down from $106.46 in 1985 to $105.22 per ton. Net shipment value f.o.b. mine/plant for Frasch sulfur increased from $122.62 to $123.79 per metric ton and recovered elemental decreased from $92.11 to $92.06 per ton in 1986.

Domestic consumption of sulfur in all forms decreased 12% from that of 1985. Eighty-seven percent of the sulfur for domestic consumption was from domestic sources, compared with 83% in 1985. The percentage distribution of domestic sources of supply was as follows: Domestic Frasch sulfur, 27%; domestic recovered elemental sulfur, 49%; and combined domestic byproduct sulfuric acid, pyrites, hydrogen sulfide, and sulfur dioxide 11%. The remaining 13% of sulfur consumption was from imports of Frasch and recovered elemental sulfur.

Yearend producers' stocks of combined Frasch and recovered elemental sulfur after inventory adjustments were essentially unchanged from those at the close of 1985. The combined yearend stocks amounted to approximately a 3 1/3-month supply based on 1986 domestic and export demands for domestically produced Frasch and recovered elemental sulfur.

The total of Frasch and recovered elemental sulfur exported during 1986 increased 39% in quantity and 33% in value. Exports of sulfur exceeded imports by over 500,000 tons, making the United States a net sulfur exporter for the first time since 1974. The average reported export value of sulfur was $132.80 per ton in 1986, compared with $138.67 in 1985. Morocco and Tunisia received 47% of these exports for fertilizer industry use. Belgium received 13%, mainly for transshipment to other European Economic Community countries. Exports of formed sulfur from the U.S west coast increased by over 30% to nearly 458,000 tons, of which 85,000 tons was shipped to Mexico.

Prepared in the Division of Industrial Minerals, March 31, 1987.

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ORIGINAL

Sulfur imports were off by 1/3 compared with 1985 imports. Imports by rail from Canada were down by 55%, while waterborne shipments from Mexico increased slightly. An estimated 210,000 tons of sulfur shipped to the west coast of Mexico from Canada and the United States was exchanged for Mexican sulfur delivered into Florida and the U.S. east coast.

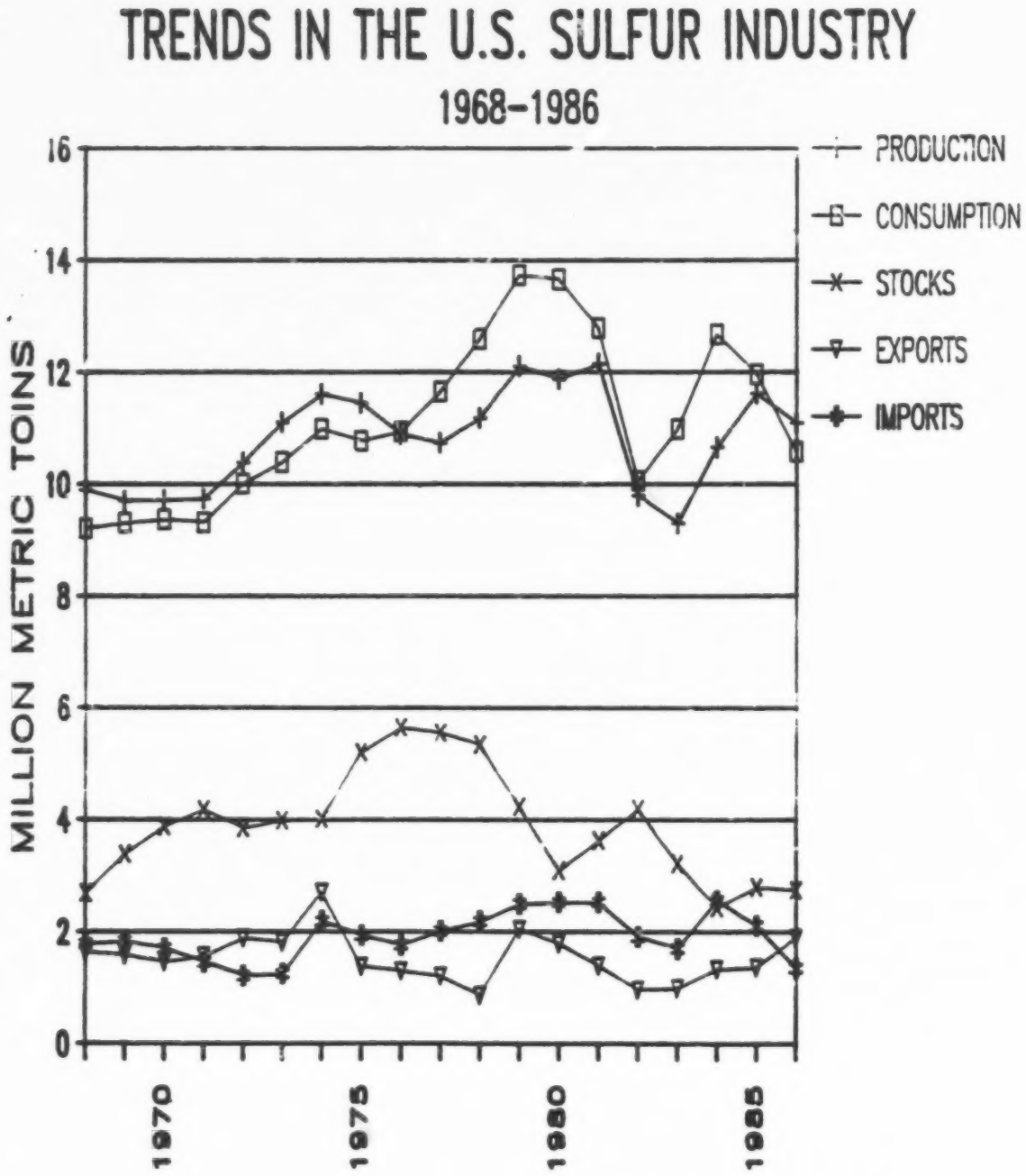

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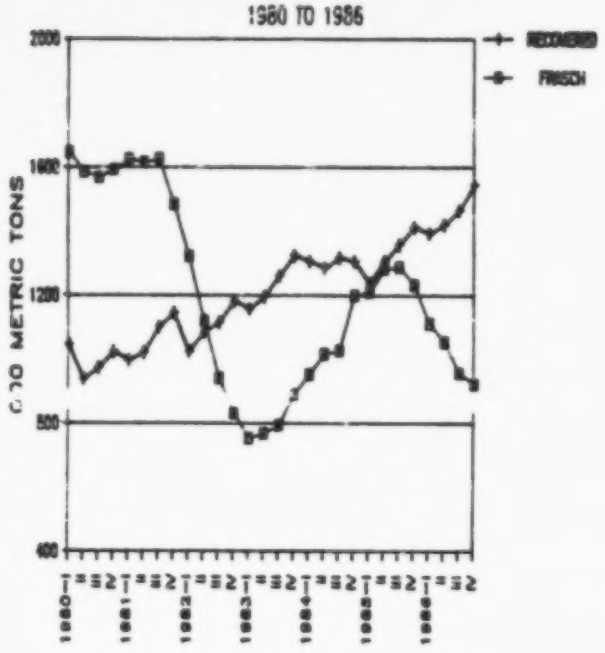
TABLE 1. - Salient sulfur statistics
(Thousand metric tons, sulfur content)

	1982	1983	1984	1985	1986
Production:					
Frasch	4,210	3,202	4,193	5,011	4,043
Recovered elemental from natural gas	1,960	2,371	2,407	2,373	2,246
Recovered elemental from petroleum ref. 1/	2,444	2,584	2,807	2,940	3,570
Byproduct sulfuric acid	828	831	962	957	919
Pyrites	265	W	W	W	W
Other forms 2/	80	302	283	328	309
Total	9,787	9,290	10,652	11,609	11,087
Shipments (sold or used):					
Frasch	3,598	4,111	5,001	4,678	4,108
Recovered elemental	4,344	5,041	5,210	5,266	5,798
Byproduct sulfuric acid	828	831	962	957	919
Pyrites	265	W	W	W	W
Other forms 2/	80	302	283	328	309
Total	9,115	10,285	11,456	11,229	11,134
Imports:					
Frasch (Mexico)	690	604	722	724	726
Recovered elemental (Canada)	1,215	1,091	1,812	1,354	605
Recovered elemental (other)	(3/)	(3/)	23	26	16
Total	1,905	1,695	2,557	2,104	1,347
Exports:					
Frasch and recovered	961	992	1,334	1,365	1,895
Consumption 4/:					
Frasch: Domestic	2,867	3,510	4,090	3,692	2,858
Imports	690	604	722	724	726
Recovered elemental:					
Domestic	4,114	4,650	4,787	4,887	5,153
Imports	1,215	1,091	1,835	1,380	621
Byproduct sulfuric acid	828	831	962	957	919
Pyrites: Domestic	265	W	W	W	W
Other forms 2/	80	302	283	328	309
Total	10,059	10,988	12,679	11,968	10,586
Yearend producers' stocks 5/:					
Frasch	3,980	3,070	2,264	2,598	2,532
Recovered	238	153	155	201	216
Total	4,218	3,223	2,419	2,799	2,748

W Withheld to avoid disclosing company proprietary data; included in "Other forms."
1/ Includes small quantity from coking operations, also includes utility plants only in 1982.
2/ Hydrogen sulfide and liquid sulfur dioxide and data indicated by the symbol W.
3/ Less than 1/2 unit.
4/ Measured as shipments, plus imports, minus exports.
5/ Reported producers' stocks after inventory adjustments.

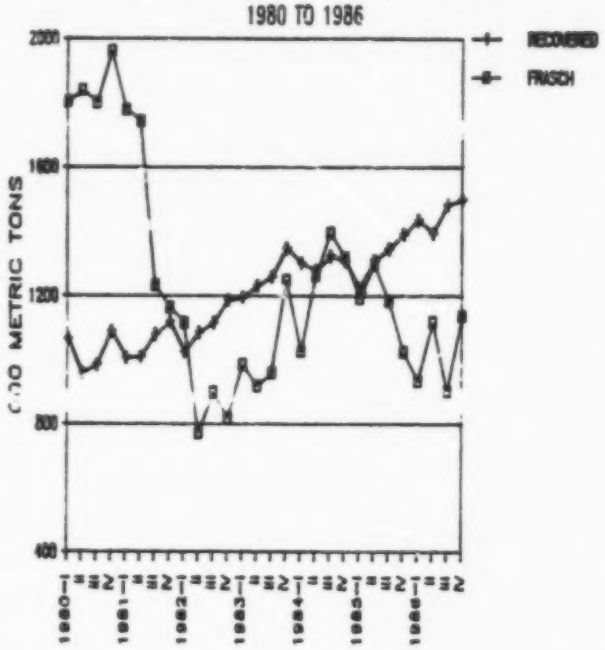
QUARTERLY SULFUR PRODUCTION

1980 TO 1986



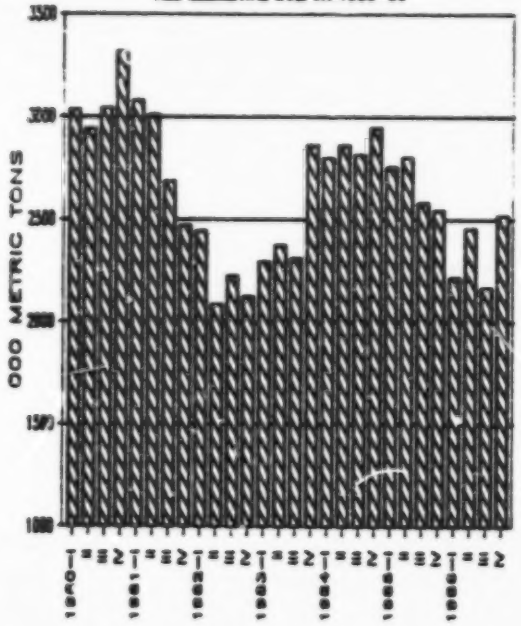
QUARTERLY SULFUR SHIPMENTS

1980 TO 1986



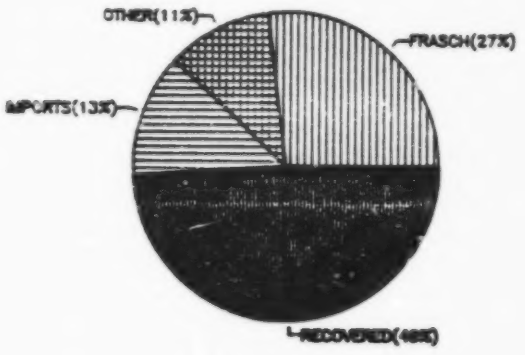
QUARTERLY CONSUMPTION

ALL ELEMENTAL SULFUR 1980–86



U.S. SULFUR CONSUMPTION

BY TYPE – 1986



10.59 MILLION TONS

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Table 2.--Recovered sulfur produced and shipped in the United States, by State
(Thousand metric tons and thousand dollars)

State	1985			1986		
	Production (quantity)	Shipments		Production (quantity)	Shipments	
		Quantity	Value		Quantity	Value
Alabama	370	367	35,421	338	341	36,452
California	590	576	47,087	634	630	50,964
Florida	91	91	W	80	80	W
Illinois	193	194	19,895	372	368	36,581
Louisiana	405	403	45,053	524	527	57,418
Michigan and Minnesota	137	138	11,623	158	158	13,938
Mississippi	578	565	62,156	702	707	79,287
New Jersey	74	74	9,357	W	W	W
New Mexico	55	55	4,281	46	46	3,621
North Dakota	108	109	6,127	105	104	7,043
Ohio	36	36	3,891	46	46	5,188
Pennsylvania	50	50	4,475	52	53	4,540
Texas	1,500	1,496	147,426	1,517	1,516	141,223
Wisconsin	1	2	96	2	2	117
Wyoming	703	699	35,335	684	676	33,517
Other 1/	420	411	52,862	558	545	63,863
Total 2/	5,313	5,266	485,084	5,816	5,798	533,752

W Withheld to avoid disclosing company proprietary data; included with "Other."
1/Includes Arkansas, Colorado, Delaware, Indiana, Kansas, Kentucky, Montana, Utah, Virginia, Washington, Puerto Rico, the Virgin Islands, and data indicated by symbol W.
2/Data may not add to totals shown because of independent rounding.

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Table 3.--Recovered sulfur produced and shipped in the United States by Petroleum Administration for Defense (PAD) district

(Thousand metric tons)

District and Source	1985		1986	
	Production	Shipments	Production	Shipments
PAD 1:				
Petroleum and coke	230	227	254	258
Natural gas	91	91	79	79
Total1/	321	318	334	338
PAD 2:				
Petroleum and coke	495	495	715	712
Natural gas	111	112	107	106
Total1/	606	608	822	818
PAD 3:2/				
Petroleum	r/1,494	r/1,464	1,830	1,818
Natural gas	r/1,480	r/1,483	1,385	1,390
Total1/	2,975	2,948	3,215	3,208
PAD 4 AND 5:3/				
Petroleum	715	700	769	766
Natural gas	693	690	673	666
California	(590)	(576)	(634)	(630)
Total1/	1,408	1,390	1,443	1,432
Grand total1/	5,313	5,266	5,816	5,798

r/Revised.
1/Data may not add to totals shown because of independent rounding.
2/Includes Puerto Rico and the Virgin Islands.
3/Quantities produced and shipped in California included in petroleum and natural gas; California total shown for information purposes only.

Table 4.--Sulfur produced and shipped from Frasch mines in the United States
(Thousand metric tons and thousand dollars)

Year	Production			Shipments	
	Texas	Louisiana	Total1/	Quantity	Value2/
1982	2,898	1,312	4,210	3,598	434,660
1983	1,915	1,286	3,202	4,111	414,210
1984	2,257	1,937	4,193	5,001	546,106
1985	2,940	2,071	5,011	4,678	573,570
1986	2,463	1,579	4,043	4,108	508,512

1/Data may not add to totals shown because of independent rounding.
2/F.o.b. mine.

Table 5.--Apparent consumption of sulfur1/ in the United States
(Thousand metric tons)

	1982	1983	1984	1985	1986
Frasch:					
Shipments	3,598	4,111	5,001	4,678	4,108
Imports	690	604	722	724	726
Exports	731	601	911	986	1,250
Total	3,557	4,114	4,812	4,416	3,584
Recovered:					
Shipments2/	4,344	5,041	5,210	5,266	5,798
Imports	1,215	1,091	1,835	1,380	621
Exports	230	391	423	379	645
Total	5,329	5,741	6,622	6,267	5,774
Pyrites, shipments	265	W	W	W	W
Byproduct sulfuric acid, shipments	828	831	962	957	919
Other forms, shipments3/	80	302	283	328	309
Total, all forms	10,059	10,988	12,679	11,968	10,586

W Withheld to avoid disclosing company proprietary data; included with "Other forms, shipments."
1/Crude sulfur or sulfur content.
2/Includes Puerto Rico and the Virgin Islands.
3/Includes consumption of hydrogen sulfide, liquid sulfur dioxide, and data indicated by symbol W.

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Table 6.--U.S. exports1/ of elemental sulfur, by country
(Thousand metric tons and thousand dollars)

Country	1985		1986	
	Quantity	Value	Quantity	Value
Algeria	--	--	22	2,990
Argentina	31	3,216	11	1,605
Belgium-Luxembourg	394	48,678	249	30,907
Brazil	173	26,617	188	28,880
Canada	5	270	19	1,116
Chile	8	1,236	2	449
Colombia	17	2,591	14	1,869
Egypt	28	4,693	40	4,585
France	26	3,577	11	1,335
India	76	11,130	66	8,653
Indonesia	(2/)	1	53	6,839
Israel	37	4,994	25	3,533
Italy	22	3,128	(2/)	4
Mexico	97	9,799	139	13,768
Morocco	220	35,074	564	77,920
Netherlands	6	772	7	820
Philippines	11	1,594	(2/)	191
Romania	24	2,658	--	--
Senegal	--	--	56	7,101
Spain	15	2,288	(2/)	6
Taiwan	23	2,883	49	6,590
Tunisia	83	11,856	322	42,215
Turkey	24	3,388	19	2,439
Uruguay	3	465	8	1,133
Venezuela	14	2,290	1	500
Yugoslavia	15	1,944	--	--
Other	14	4,104	31	6,206
Total3/	1,365	189,248	1,895	251,664

1/Includes exports from the Virgin Islands.
2/Less than 1/2 unit.
3/Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.

Table 7.--U.S. imports of elemental sulfur, by country

(Thousand metric tons and thousand dollars)

Country	1985		1986	
	Quantity	Value1/	Quantity	Value1/
Canada	1,354	110,231	605	50,342
Mexico	724	85,778	726	89,709
Venezuela	24	2,972	16	1,891
Other2/	2	259	(3/)	278
Total	2,104	199,240	1,347	142,220

1/Declared customs valuation.
2/Includes China, the Federal Republic of Germany, Italy, Japan, New Caledonia, and the United Kingdom in 1985 and Dominican Republic, France, the Federal Republic of Germany and Japan in 1986.
3/Less than 1/2 unit.

Source: Bureau of the Census.

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